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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/633,782	08/07/2000	Gun-Hee Lee	3430-0129P	3862

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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

09/633,782

Applicant(s)

LEE ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan. 24, 2005 has been entered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 9-11 and 17-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Amended claims 1 and 12 recite a backlight device disposed beneath the second substrate that has a common electrode. If the common electrode was made of an opaque conductive material (e.g. Al or Cr) as claims 9-11 and 17-18 cited, the backlight

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device would be "unnecessary waste of time and expense" since the light is prevented to enter the liquid crystal layer thereby impossible or not able to modulate the light.

Therefore, if the common electrode was made of an opaque conductive material, the LCD device is not able to work or function since the opaque conductive material will BLOCK the light from the light source ("opaque" defines as "impervious to the passage of light in Websters II New Riverside University Dictionary).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-6 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munakata (US6373540B1) in view **Umemoto et al. (US6196692B1)** in further view of Ono et al. (US5847781A) and **Chang et al. (US6166400A)**.

In regard to claim 1, Manakata teaches (Figs. 2A-2D, 3A-J, col. 7 line 42 to col. 9 line 36) a liquid crystal display device comprising:

- o display panel (by turning upside down or 180° a whole liquid crystal cell,  
please see Responses to Arguments of Final Office Action mailed on  
**6/18/2003 and the last non-final Action mailed on 3/24/04**) including a lower  
layer 1 at the lowest portion of the display panel and an uppermost layer 2,  
positioned above the lowest layer at the uppermost portion of said display panel;

- o first substrate (lower substrate 2) forming an uppermost layer of said display panel including
  - a) a switching element (thin film transistor 8) on the first substrate and switching element being connected to a gate line and data line; the switching element being a thin film transistor having a gate electrode 16 formed on the first substrate, a gate insulating layer 17 formed on an exposed surface of the first substrate while covering the gate, an active layer 18 on the gate insulating layer over the gate electrode;
  - b) a passivation film (interlayer insulating film 20) formed over the whole surface of the first substrate while covering the switching element;
  - c) a pixel electrode (light reflection layer 9 acting as pixel electrode) on the passivation film;
  - d) a black matrix BM formed on the passivation film and over the switching element;
  - e) a color filter (planarizing layer 14 made by coloring photoresists) formed over the pixel electrode;
  - f) a first orientation film 15 formed on the black matrix and the color filter and above the pixel electrode.
- o a second substrate (upper substrate 1) aligned with the first substrate having a common electrode 6 and a second orientation film 7, the orientation film formed on the common electrode; The second substrate having no switching element

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disposed thereon, forming said lowest portion of the display and being aligned with the first substrate since the **whole liquid crystal cell turns upside down;**

- o sealing inherently the first and second substrates with a sealant; This is a well known prior art for keeping liquid crystal layer from environment.
- o a liquid crystal layer 3 interposed between the first and second substrates.
- o possible light source coming in at second substrate (upper substrate 1), when **liquid crystal cell turns upside down** the light source will be at beneath of the second substrate.

In regard to claim 12, Manakata teaches (Figs. 2A-2D, 3A-J, col. 7 line 42 to col. 9 line 36) a method of manufacturing a liquid crystal display device, which comprises an array of thin film transistors and an array of pixel electrodes and a backlight device, including:

- o forming a gate line and a gate electrode on a first substrate said first substrate forming the uppermost layer of a display panel, the gate electrode extending from the gate line;
- o forming a gate insulating layer 17 on the exposed surface of the upper substrate while covering the gate line and the gate electrode;
- o forming a semiconductor layer 18 over the gate electrode;
- o forming a data line and source and drain electrodes 21/22, the source electrode overlapping one end portion of the semiconductor layer, the drain electrode overlapping the other end portion of the semiconductor layer, the source and

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drain electrodes spaced apart from each other, the source electrode extending from the data line;

- o forming a passivation film 20 over the whole surface of the first substrate while covering the source and drain electrodes, the passivation film having a contact hole on the drain electrode;
- o forming a pixel electrode (reflective layer 9 could act as pixel electrode) on the passivation film, the pixel electrode electrically connected with the drain electrode through the contact hole;
- o forming a color filter 14 on the pixel electrode;
- o forming a black matrix BM over the thin film transistor
- o forming a first orientation film 15 on the color filters and the black matrices;
- o forming a common electrode 6 on a second substrate;
- o forming a second orientation film 7 on the common electrode;
- o aligning the first substrate turned upside down with the second substrate with a gap between the first substrate and the second substrate so that the first orientation film of the first substrate is opposite to the second orientation film of the second substrate and the thin film transistor is also turn upside down when **liquid crystal cell turns upside down**;
- o inherently sealing the first and second substrates with a sealant; and inherently injecting a liquid crystal between the first substrate and the second substrate.

However, Munakata only disclose a possible light source at, but does not disclose a second substrate formed adjacent a backlight device that is disposed beneath second substrate such that the second substrate is located between the backlight device and the first substrate.

**Umemoto et al.** teach (Figs. 6-7) a backlight device (front light 1 becoming the backlight when liquid crystal cell turns upside down) that is disposed under second substrate 61 such that the second substrate is located between the backlight device and the first substrate 63 for obtaining brightness, easy to view, and reducing in power consumption (col. 13 lines 29-31).

However, Munakata and **Umemoto et al.** fail to disclose (a) the ohmic contact layer forming between the active layer and source and drain electrodes, wherein the source electrode overlaps one end portion the active layer and the drain electrode overlaps the other end portion of the active layer (claim 2).; (b) a first light absorbing film under the gate electrode; (c) a second light absorbing film under the source electrode and a third light absorbing film under the drain electrode according to claims 3-4 and 13-14; (d) the first light absorbing film under the gate line and the second light absorbing film under the data line according to claim 5-6.

**Chang et al.** Teach (Fig. 1) the ohmic contact layer 15 forming between the active layer 13 and source and drain electrodes 16a/b wherein the source electrode



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overlaps one end portion the active layer and the drain electrode overlaps the other end portion of the active layer for reducing a leakage current (col. 1 lines 43-45 and col. 2 lines 47-50).

Ono et al. teach (Figs. 3 and 7, col. 7 lines 5-16) a liquid crystal display device further comprising a light absorbing film AS formed under the active layer d0 and under the source electrode or data line DL or drain electrode SD1 for reducing reflecting or scattering from source and drain electrodes or data lines, and therefore resulting in dark display. For the same reason, a light absorbing light obviously also is formed under the gate line or gate electrode. It would have been an obvious to one having ordinary skill in the art at the time the invention was made to form a light absorbing light under the gate line or gate electrode since the examiner takes Office Notice of the equivalence of a light absorbing film AS formed under the source electrode or data line DL or drain electrode SD1 and a light absorbing light under the gate line or gate electrode for their use in the LCD art and the selection of any of these known equivalences to result in dark display would be within the level of ordinary skill in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Munakata disclosed with (1) a backlight device that is disposed under second substrate 61 such that the second substrate is located between the backlight device and the first substrate 63 for obtaining brightness, easy to view, and reducing in power consumption as taught by Umemoto et al. (col. 13 lines 29-31); (2) the ohmic contact layer forming

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between the active layer and source and drain electrodes wherein the source electrode overlaps one end portion the active layer and the drain electrode overlaps the other end portion of the active layer for reducing a leakage current as taught by Chang et al. (col. 1 lines 43-45 and col. 2 lines 47-50); (3) a first light absorbing film forming between the first substrate and the gate electrode, gate line; and a second light absorbing film forming between the active layer and the gate insulating layer for reducing reflecting or scattering from source, gate drain electrodes or data and gate lines, and therefore resulting in dark display as taught by Ono et al. (col. 7 lines 5-16).

2. Claims 7-8, 15-16 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munakata (US6373540B1) in view **Umemoto et al. (US6196692B1)** in further view of Ono et al. (US5847781A) and **Chang et al. (US6166400A)** as applied to claims 1-6 and 12-14 and in further view of Onishi et al. (US 5450220 A).

Munakata and **Umemoto et al.** fail to disclose features of claims 7-8, 15-16 and 19-20.

Onishi et al. teach the pixel electrodes 25 and the counter electrodes 27 made of ITO serving as transparent electrodes for applying a voltage to the display medium 28.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Munakata disclosed with the common and pixel electrodes made of ITO serving as transparent electrodes for applying a voltage to the display medium as taught by Onishi et al. (col 26 lines 9-19).

3. Claims 9-11 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munakata (US6373540B1) in view **Umemoto et al. (US6196692B1)** in further view of Ono et al. (US5847781A) and **Chang et al. (US6166400A)** as applied to claims 1-6 and 12-14 above, and in further view of Lee et al. (US6177973B1).

Munakata and **Umemoto et al.** fail to disclose features of claims 9-11 and 17-18.

Lee et al teach (Fig. 1A col. 2 lines 37-45) a liquid crystal display device, wherein the common electrode made of an opaque conductive material of Aluminum or chromium, which is used to make light shielding or reflecting electrode. Thus, an opaque-conductive material may also be used for a reflective type liquid crystal display.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Munakata disclosed with the common electrode made of an opaque conductive material

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of Aluminum or chromium for light shielding or reflecting as taught by Lee et al. (lines 37-45).

### ***Response to Arguments***

Applicant's arguments filed on Jan 24, 2005 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are follows:

A. The Applicants also request further explanation of the relevance of the Examiner's statements to the characterization of layer  $d_0$  as a light absorbing film in Ono's reference (Applicants submit that layer  $d_0$  has been improperly characterized as a light absorbing film).

Examiner's responses to Applicants' ONLY arguments are follows:

A. Ono disclose the semiconductor layers  $A_s$  and  $d_0$ , which exhibit a light absorbing function (col. 7 lines 12-14).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim H. Robert can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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HOAN C. NGUYEN  
Examiner  
Art Unit 2871



**ROBERT H. KIM**  
**SUPERVISORY PATENT EXAMINER**  
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